



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center
8604 La Jolla Shores Drive
La Jolla, CA 92037

04 June 2004

DRAFT CRUISE INSTRUCTIONS

NOAA Ship: NOAA Ship *McArthur II*

Cruise Number: AR-04-05

Cruise Dates: 27 June 2004 to 3 November 2004

Cruise Title: SPLASH – Structure of Populations, Levels of Abundance and Status of Humpbacks. The objective of the project is to locate, collect data on and understand the distribution of humpback whales (*Megaptera novaeangliae*) throughout the North Pacific.

Study Area: Western Canada, Gulf of Alaska, Aleutian Islands and Bering Sea

Tracklines are included at the end of this document in Appendix 1. Both tracklines and waypoints have been sent to the ship electronically in Nobeltec format.

Sponsoring Institution: NOAA/NMFS, Southwest Fisheries Science Center (SWFSC)
Protected Resources Division (PRD)

Cruise Description and Objectives

The overall objective of the SPLASH 2004 cruise is to locate, collect data on and understand the distribution of humpback whales (*Megaptera novaeangliae*) which are found in the waters of Western Canada, Gulf of Alaska, Aleutian Islands and Bering Sea. This project is part of a larger international project (SPLASH) designed to estimate the abundance and determine the population structure for humpback whales throughout the North Pacific. This project involves the governments of Canada and Mexico as well as multiple agencies within the government of the U.S. The primary study methods include photo-identification and biopsy sampling. Passive acoustics (a towed hydrophone array and sonobuoys) will be used to aid in finding aggregations of humpback whales. In addition, biological and oceanographic data may be collected to better characterize the whale's environment, and survey data will be collected on all other cetacean and pinniped species that are observed. Biopsy samples may also be taken from other cetacean species in areas where they have been poorly sampled in the past. The survey is planned to follow predetermined tracklines, however, tracklines may be modified based on real-time information about humpback whale distribution (from this cruise and from other sources) and weather. Weather is expected to be especially challenging on Leg 4 in October/November. Although tracklines for Leg 4 are primarily in outer coastal waters, considerable time will be spent in inland waters of Southeast Alaska when weather prevents work on the outside.

Chief Scientist: Dr. Jay Barlow, SWFSC (858) 546-7178, Jay.Barlow@noaa.gov



PLAN OF OPERATIONS

1.0 DAYLIGHT OPERATIONS

1.1 Cetacean Survey - Line-transect survey methods will be used to collect abundance data. At the beginning of each day search effort should start on the trackline. The *McArthur II* should travel at an estimated 10 knots (through the water) along the designated trackline. While on search effort, if the ship's speed through the water should deviate from this by more than one knot, the bridge personnel will notify the mammal team on watch or the Cruise Leader. A daily watch for cetaceans will be maintained on the flying bridge during daylight hours (approximately 0600 to 2000) by eight mammal observers. Each observer will work in 2-hour rotations, manning each of the following three stations on the flying bridge for 40 minutes: a port side 25x150 binocular station, a centerline data recorder position and a starboard 25x150 binocular station. Although daylight hours will begin before 0600 and end well after 2000 during the first two legs of the cruise, we anticipate working from sunrise to sunset.

1.1.1 Logging of Data - A log of observation conditions, watch effort, sightings, and other required information will be entered into a computer, hooked up to the ship's GPS (for course, speed and position information) and SCS (for weather and heading information). An "independent observer" may keep a separate watch of animals sighted during the cetacean survey operations for comparison later with the observer team's data.

1.1.2 Breaking Trackline - On sighting a marine mammal school or other feature of biological interest, the Cruise Leader or marine mammal observer team on watch may request that the vessel be maneuvered to approach the school or feature for investigation. Biopsy and photographic operations may commence from the bow based on directions from the Cruise Leader or Senior Marine Mammal Observers. Much more time will be spent obtaining photographs and biopsy samples on this cruise than on any previous SWFSC marine mammal survey. The Cruise Leader will frequently request the deployment of a small boat for biopsy, photographic or other operations (see 1.3).

It may occasionally be necessary to divert the ship's course from the established trackline during regular effort due to glare or adverse sea conditions. Under these circumstances, the ship may divert up to 30 degrees from the established course. This deviation may continue until the ship is 10 nm from the trackline, at which point, the ship should turn back toward the trackline.

1.1.3 Resuming Effort - When the observers have completed scientific operations for the sighting, the ship will resume the same course and speed as prior to the sighting. If the pursuit of the sighting has taken the ship more than 10 nm from the trackline, the observers should be notified. The Cruise Leader or Senior Observers may request that, rather than proceed directly toward the next waypoint, the ship take a heading of 20 degrees back toward the trackline.

1.2 Small Boat Work - A small boat will frequently be required for biopsy sampling or photography. Deployment will be requested by the Cruise Leader on an opportunistic basis, possibly multiple times in a single day, providing the Commanding Officer concurs that operating conditions are safe. Unless the Commanding Officer allows otherwise, the small boat will remain within sight and radio contact at all times while deployed. An average of approximately five hours of small boat work is anticipated per day. To help accommodate this high level of small boat usage, the SWFSC will be providing a skilled cox'n to serve as the primary small boat operator on Legs 1-3. With the exception of the small boat, safety apparel and an E-PIRB, all necessary gear will be furnished by the scientific party including an emergency communications kit (satellite phone and handheld GPS unit) which will be kept

aboard the small boat when deployed. See Appendix 3 for the “Statement of Intent and Risk Assessment for Small Boat Use.”

1.3 Biopsy Sampling – Biopsy samples for genetic analyses of marine mammals will be collected frequently on this survey. Copies of the necessary permits will be provided to the Commanding Officer prior to the start of the cruise. The animals to be sampled will be approached by the research vessel during normal survey operations, will approach the vessel on their own or will be approached by a small boat. Samples will be collected using a dart fired from a crossbow or rifle if animals are within 10 to 30 m of the bow of the vessels. With the exception of the small boat and safety apparel, all necessary gear will be furnished and deployed by the scientific party.

1.4 Photography - Photographs of marine mammals will be taken frequently on this survey. Fluke photographs of humpback whales are the primary mission for this project. Copies of the necessary permits will be provided to the Commanding Officer prior to the start of the cruise. The animals to be photographed will be approached by the research vessel during normal survey operations, approach the vessel on their own, or be approached by a small boat. With the exception of the small boat and safety apparel, all necessary gear will be furnished by the scientific party.

1.5 Salvage of Marine Mammals - Marine mammal body parts may be salvaged on an opportunistic basis at the discretion of the Cruise Leader. This includes whale and dolphin ivory and carcasses. In the event that this occurs, scientific freezer space will be needed to store the mammal body parts. Permits to salvage and import marine mammal parts will be present on the vessel. All marine mammal specimens obtained will be archived at the SWFSC, but may be released on extended loan to recognized research institutions according to existing guidelines.

1.6 Acoustics - There will be no backscatter or ADCP data collected from the ship during this cruise. Passive acoustics (sonobuoys and towed hydrophones, see below) will be used to find and record marine mammals.

1.6.1 Sonobuoys - Sonobuoys may be deployed periodically from either the *McArthur II* or a small boat on an opportunistic basis at the discretion of the Cruise Leader. Several reusable sonobuoys will be deployed and retrieved by small boat as needed; however, most sonobuoys will be expendable. With the exception of the small boat and safety apparel, all of the necessary equipment will be supplied and operated by scientific personnel.

1.6.2 Towed Array - A small hydrophone array will be towed during daylight hours to collect data on cetacean vocalizations and assess the acoustic characteristics of the vessel for future Protected Resources Division projects. The array will be deployed each morning prior to the start of visual observations and retrieved each evening after search effort ends (and whenever increased maneuverability is required). The array will be wound onto a hydraulic-powered winch supplied by the SWFSC and will be operated by acousticians. Hookup to a ship-powered hydraulic system will be required. A team of three acoustic technicians will monitor the array, record sounds made by cetaceans and localize their positions. The cruise leader may request that the vessel be turned and visual observers search for acoustically detected cetaceans. During the first leg of the cruise, the cruise leader will work with the Commanding Officer to assess the maneuvering limits of the ship for this array.

1.7 Oceanography - Oceanographic sampling will be done by the Ship’s Survey Technician and other scientists as designated by the cruise leader while underway.

2.0 NIGHT OPERATIONS

A chronological record of oceanographic stations will be kept by the ship by way of the electronic Marine Operations Log (e-MOA) with dates and times in GMT. The ship will provide a copy of the e-MOA data to the SWFSC oceanographer at the completion of the cruise. Setup (including termination), maintenance and operation of the SeaBird CTD (conductivity- temperature-depth) system, including collection of oceanographic data and data processing, will be conducted by the ship's Electronic and Survey Technicians. The crew of the vessel will operate all deck equipment including the A-frame during CTD deployment and recovery, and be responsible for the condition of the conducting cable of the winch. All instruments, their spares and spare parts provided by the ship must be maintained in working order and, if applicable, have current calibrations (within previous 12 months).

2.1 CTD Station - One CTD station will be occupied each night. CTD data will be collected using a SeaBird 9/11+CTD. All casts are to 1000 m, with the descent rate at 30 m/min for the first 100 m of the cast, then 60m/min after that, including the upcast between bottles. Only two bottles will be tripped at 500 m and 1000 m for salinity analysis to track the conductivity sensor. The cast will be conducted daily after marine mammal efforts have been completed. Cast times are subject to change since sunset will vary during the cruise. Additional CTD stations may be requested by the Cruise Leader in areas of special interest.

2.2 Transit - When scientific operations are complete for the night, the ship will resume course along the trackline to reach the start point for the next day's operations. Less nighttime transit is planned than during previous ETP marine mammal surveys.

3.0 SCIENTIFIC PERSONNEL

3.1 Chief Scientist - The Chief Scientist is Dr. Jay Barlow, SWFSC, at phone (858) 546-7178. The Cruise Leader is the authorized representative of the Chief Scientist, with all the designated powers and responsibilities of the Chief Scientist.

The Chief Scientist is authorized to alter the scientific portion of this cruise plan with the concurrence of the Commanding Officer provided that the proposed changes will not: (1) jeopardize the safety of personnel or the ship, (2) exceed the time allotted for the cruise, (3) result in undue additional expense or (4) change the general intent of the project.

3.2 Participating Scientists - Please refer to Appendix 2.

3.3 Personnel Switches - For all legs, the incoming scientific personnel will board the ship on the day of its arrival in port; outgoing personnel will stay in a hotel or make other plans.

3.4 Identification - All scientific personnel will have government identification cards.

3.5 Medical Forms - All scientific personnel will complete a NOAA Health Services Questionnaire (NHSQ) prior to embarking, as per NC Instruction 6000. This form will be routed through MOC-P Health Services for approval prior to the cruise.

4.0 EQUIPMENT

4.1 Supplied by scientific party:

1. Nine 7x50 hand-held binoculars
2. Three 25x150 binoculars and stands
3. One 20x60 hand-held gyro-stabilized binoculars
4. Two observer chairs for flying bridge
5. Portable wooden desk units for flying bridge
6. Video camera and tapes
7. Two digital SLR cameras, one 35mm camera with lenses, digital film and 35mm film
8. Three handheld radios
9. Three laptop computers for scientific party e-mail use
10. One desktop computer mounted below decks (Chief Scientist's stateroom) with CAT5 KVM extension units at CPUs and remote console units on the flying bridge.
11. Laptop computer with external hard drive for Photo-ID
12. Laptop computer for use by Cruise Leader
13. Spare tower for data computer
14. Spare KVM extension system
15. Portable GPS component as backup to ship's system
16. Crossbows, biopsy darts and tips, sample vials and storage solution (70% ETOH with MSDS); biopsy rifles, 9mm blank charges; one notebook computer for biopsy data entry and thermal label printer
17. Oceanographic data logs and log books
18. Salinity sample bottles (48 each, in two boxes)
19. Three pallets of sonobuoys (5'x5'x5', 1200 lbs each when full)
20. Two sonobuoy receivers
21. DAT recorder and laptop computer for sonobuoys
22. Hydrophone array and directional hydrophone
23. Aluminum hydraulic winch for hydrophone array, 5' x 7' footprint, Hansen Coupling Division male LL6-HKP/LL8-HKP ends to quick connect style connectors on 50' hose to hydraulic power supply for acoustic winch
24. Acoustics recording equipment, including mixer and recording rack, three laptop computers, Hi-8 tapes and accessory equipment.
25. Permits for specimen collection and foreign research (copies of which will be provided to the Commanding Officer)
26. Computer data storage media (disks, etc.)
27. Paper for copier and printers
28. Seven fish boxes (44" x 48" x 31") for equipment storage
29. SeaBird Electronics interface box to be connected to thermosalinograph, secondary temperature input to interface with SCS
30. Standardized seawater for oceanographic operations

4.2 Supplied by ship - We request the following systems, technical support, sufficient consumables, back-up units and on-site spares. All measurement instruments are assumed to have current calibrations and we request that all pertinent calibration information be included in the data package.

1. One CAT5 cable running from location site for CPUs to the flying bridge consoles
2. Email setup and network printer setup for six stations in the scientific space and two computers in the Chief Scientist's stateroom

3. Power, ship's GPS, ship's SCS to computer running the flying bridge console (mammal data computer)
4. Two network connections to the Chief Scientist's stateroom (mammal data computer and Cruise Leader's laptop)
5. Three handheld radios (as spares)
6. Small boat for biopsy sampling and photography
7. Freezer space for biological samples (45 cu. ft.)
8. Bottom depth checking (during CTD casts in depths less than 2000 m).
9. Seabird 9/11+ CTD system including rosette with Niskin bottles (2.5L, 2 each)
10. Backup SeaBird CTD frame with weights and Niskin bottles (any size, two each). If the vessel is unable to provide a spare frame complete with weights and Niskin bottles, the ship shall provide one spare conductivity sensor and one spare temperature sensor
11. Oceanographic winch with minimum 1500 meters of .322" conducting wire, terminated to CTD
12. SeaBird Micro thermosalinograph (SBE45) and connection to SCS from interface box
13. Scientific Computing System for data collection
14. Salinometer, in properly maintained working order
15. Marine Operations and Deck Log/Weather Observation, filled out by Deck Officers
16. Installation of SWFSC-supplied sonobuoy antenna and coax cable to the scientific lab
17. Two ship's GPS connections to the aft port bulkhead of the dry lab area for acoustics computers
18. Exterior storage space for 3 pallets of sonobuoys (see item 19 in previous section)
19. Deck storage space for 7 Fish Boxes (see item 28 in previous section)
20. Space for and installation of winch for hydrophone array (see item 23 previous section)
21. Hansen Coupling Division female LL6-HKP/LL8-HKP ends to quick connect style connectors on hose from hydraulic power supply for acoustic winch
22. Copy machine
23. Network access to a printer for biopsy sampling computer
24. Connection of Micro Thermosalinograph to the SBE interface box, including GPS input (append to data string with raw temperature, conductivity and calculated salinity)

4.3 Installation and Maintenance - Prior to departure from Seattle the Chief Scientist and members of the scientific party may board the vessel, with permission of the Commanding Officer, to test survey equipment and environmental sensors, set up equipment, and assemble equipment and work spaces on flying bridge.

The Cruise Leader will assign a member of the scientific party to check the temperature of the scientific freezers twice per day and notify the Cruise Leader in the event of significant changes.

The Chief Scientist shall submit operating and emergency procedures prior to commencing the project. These should include instructions on handling, controlling access to the material, monitoring laboratory contamination, providing notification requirements, keeping records, and decontaminating facilities and personnel.

4.4 Hazardous Materials - The Chief Scientist shall be responsible for complying with NC Instruction 6280a, Hazardous Materials and Hazardous Waste; policy, guidance, and training, dated February 4, 1991, paragraph 7.g and paragraph 9. By Federal Law, the ship may not sail without a complete inventory of Material Safety Data Sheets (MSDS's) and appropriating neutralizing agents, buffers and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemicals brought onboard. The Chief Scientist will provide the Commanding Officer with a copy of all MSDS's prior to the cruise.

5.0 DATA RESPONSIBILITIES

5.1 Collection of Data - The Chief Scientist will receive all original data related to the project. The Chief Scientist will in turn furnish the Commanding Officer with a complete inventory listing of all data gathered by the scientific party, detailing types of operations and quantities of data prior to departing the ship. All data gathered by the vessel's personnel will be released to the Chief Scientist upon request, including supplementary data specimens and photos gathered by the scientific crew.

5.2 Dissemination of Data - The Chief Scientist is responsible for the quality assurance, disposition and archiving of data and specimens collected aboard the ship. The Chief Scientist is also responsible for the dissemination of copies of these data to cruise participants and to any other requesters. The SWFSC cruise report will be submitted according to SWFSC procedures to appropriate persons and groups.

5.3 Foreign Research Clearance Reports - A request for research clearance in foreign waters has been submitted by SWFSC. The Chief Scientist is responsible for satisfying the post cruise obligations associated with diplomatic clearances to conduct research operations in foreign waters.

5.4 Evaluation Form - The Chief Scientist will complete the Ship Operations Evaluation Form and forward it to the Office of Marine and Aviation Operations. The Commanding Officer will provide this form.

6.0 ADDITIONAL INVESTIGATIONS AND PROJECTS

6.1 Ancillary Projects - Ancillary projects are secondary to the objectives of the cruise, should be treated as additional investigations, do not have representation aboard, and are accomplished by the ship's force. Ancillary tasks will be accomplished in accordance with the NOAA Fleet Standing Ancillary Instructions. Any additional work will be conducted so as not to interfere with operations as outlined in these instructions. The Chief Scientist will be responsible for determining the priority of additional work relative to the primary project with approval from the Commanding Officer.

7.0 COMMUNICATIONS

7.1 Radios - The Cruise Leader or designee may request from the Commanding Officer the use of radio transceivers aboard the ship to communicate with other vessels and aircraft, if necessary.

SWFSC will supply their own handheld radios for intra-ship communication and communication with the small boats. However, the Cruise Leader may request the use of the ship's handheld radios if the supplied radios should fail.

7.2 Telephone - The Cruise Leader or designee may require access to the ship's INMARSAT, Iridium, or cellular telephone systems with permission from the Commanding Officer. The Commanding Officer will provide the Cruise Leader with a log of all INMARSAT calls made from the ship for SWFSC business at the end of each leg. In accordance with the Communications Reimbursement Policy, SWFSC will pay these charges via a transfer of funds from SWFSC to the ship.

7.3 Electronic Mail - All members of the scientific party will have access to e-mail for

communications with persons not aboard the ship. The amount of such communication traffic will be determined by the Chief Scientist.

7.4 Routine Reports - The Cruise Leader will submit a weekly cruise report, along with time and attendance for the scientific party, to the Survey Coordinator each Thursday during the cruise via e-mail or, if e-mail is not functioning properly, via fax. The Survey Coordinator at SWFSC will be on the distribution list for the ship's noon position reports.

8.0 MISCELLANEOUS

8.1 Pre-cruise Meeting - A pre-cruise meeting between the Chief Scientist (and his staff) and the Commanding Officer (and his staff) will be held prior to the start of the cruise to identify operational requirements (i.e., overtime, modifications, repairs, or procurements).

8.2 Underway Meetings - Meetings between the Commanding Officer (and other officers) and the Cruise Leader should occur at the beginning and end of each leg to discuss and solve any problems or changes that may arise. Daily safety and operational meeting will be held while underway. These meetings will generally be attended by the CO, FOO, Chief Bosun, Chief Marine Engineer, Survey Tech and Chief Scientist. Additional meetings should occur as needed.

8.3 Debrief - A post-cruise debriefing will be held between the Chief Scientist and the Commanding Officer. If serious problems are identified, the Commanding Officer shall notify the Marine Operations Center-Pacific, in the most direct means available. The Chief Scientist shall document identified problems in the Ship Operations Evaluation Form. The time and date for debriefing will be determined toward the end of the cruise.

8.4 Time and Attendance - Time and Attendance will be filled out by the SWFSC timekeeper while the ship is at sea based on information transmitted by the Cruise Leader to the Survey Coordinator. Scheduled overtime is authorized for Saturdays, Sundays and holidays. Irregular overtime will be authorized by the Cruise Leader as required. SWFSC personnel are authorized per diem at the rate of \$2.00 per day to be paid via a travel voucher at the termination of the cruise. Task Number B8L5S1J-P22 will pay for per diem and overtime for any SWFSC permanent, term or temporary employees: Cruise Leaders, Observers, Acousticians and Oceanographers. Regular salary for these personnel will be paid by the CYOP task from which they are normally paid.

Time and Attendance for Aquatic Farms contract employees will be based upon a pre-determined schedule. If events of the cruise alter the planned schedule, the Cruise Leader will notify the Survey Coordinator and appropriate changes will be brought to the attention of Aquatic Farms.

8.5 Navigation - Primary control will be GPS, also dead reckoning based on visual bearings and radar ranges when possible.

8.6 Scientific Spaces - The Cruise Leader shall be responsible for the proper upkeep and cleaning of all spaces assigned to the scientific party, both laboratory and living spaces, throughout the cruise. The Cruise Leader or Chief Scientist will make berthing assignments for scientific personnel on a per-leg basis, with approval of the Commanding Officer.

For further information contact LTJG Jason Appler, Survey Coordinator, Southwest Fisheries Science Center, National Marine Fisheries Service, NOAA, 8604 La Jolla Shores Drive, La Jolla, CA 92037; Phone (858) 546-5672. More information about the cruise and project can also be found at the SPLASH website: <http://swfsc.nmfs.noaa.gov/PRD/PROJECTS/splash/default.htm>.

Prepared by: _____/S/_____ Dated: _____
LTJG Jason Appler
Survey Coordinator, SWFSC

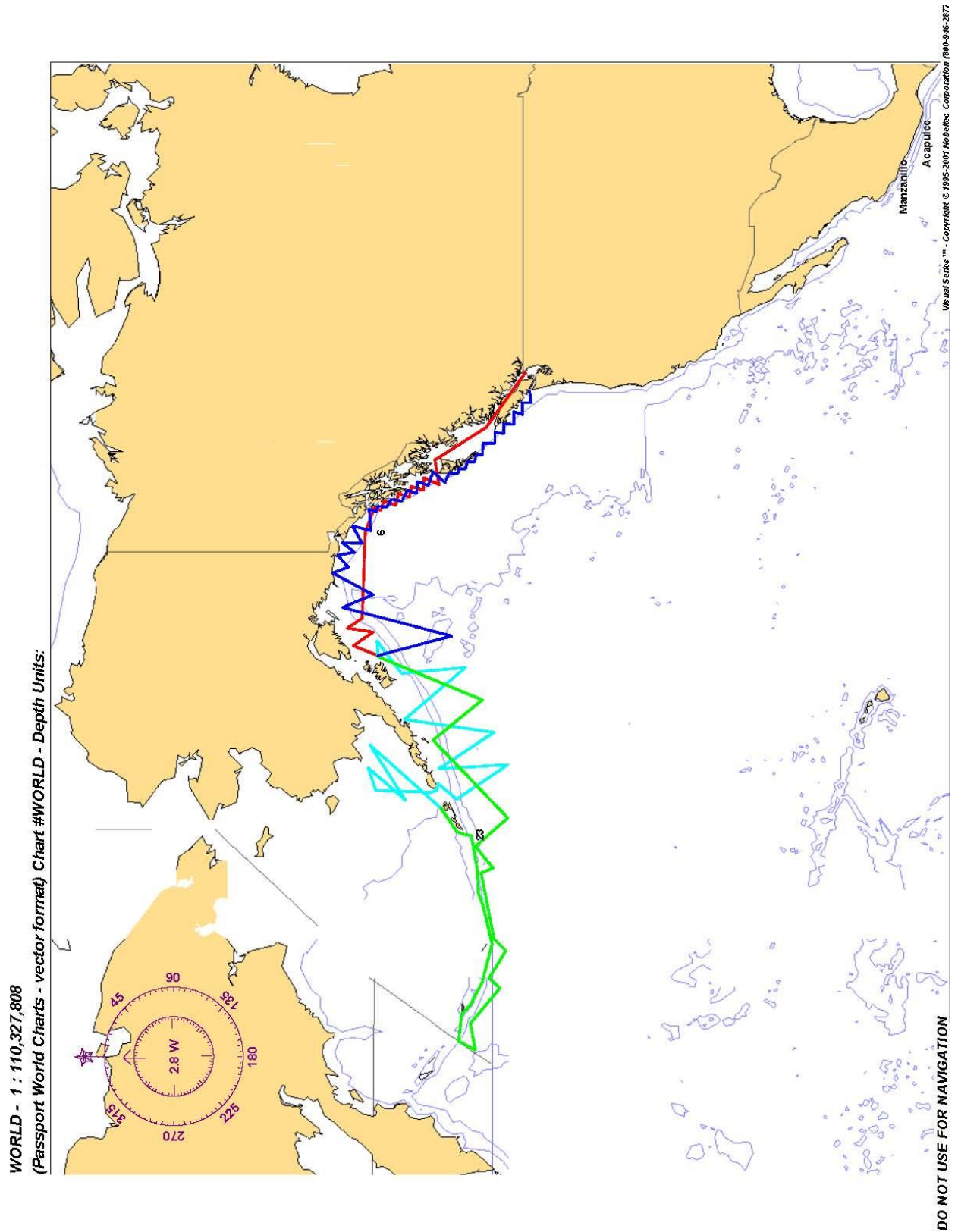
_____/S/_____ Dated: _____
Annette Henry
Survey Coordinator, SWFSC

_____/S/_____ Dated: _____
Dr. Jay Barlow
Chief Scientist, SWFSC

Approved by: _____/S/_____ Dated: _____
Dr. William W. Fox, Jr.
Science Director, F/SWR

Approved by: _____/S/_____ Dated: _____
Captain John C. Clary, NOAA
Acting Director, Marine Operations Center

Appendix 1. Scheduled tracklines for Leg 1 (blue), Leg 2 (green), Leg 3 (cyan) and Leg 4 (red).



Appendix 2. Personnel for the Structure of Populations, Levels of Abundance and Status of Humpbacks (SPLASH 2004) cruise aboard the NOAA Ship McArthur II

McArthur II Leg 1: Seattle, WA – Kodiak, AK

Position	Name	Affiliation	Berth
Cruise Leader	Jay Barlow	SWFSC	
ID Expert	Richard Rowlett	SWFSC	lower bunk
ID Expert	Cornelia Oedekoven	AFL	
Biopsy Project Leader	Juan Carlos Salinas	AFL	
Observer II	Holly Fearnbach	AFL	
Observer II	Michael Richlen	AFL	
Observer I	Siri Hakala	HWNMS	
Acoustics Leader	Shannon Rankin	AFL	
Acoustics Assistant	Liz Zele	AFL	
Acoustics Assistant	Julie Oswald	AFL	
Cascadia Boat Driver	Todd Chandler	Cascadia	
Humpback Sanctuary	Allan D. Ligon	HWNMS	
Visiting Scientist	Robert Holland	SWFSC	
Visiting Scientist	Lilian Carswell	USFWS	
Teacher-at-sea/Volunteer	Katie Roberts	Graduate School of Oceanography/URI	

McArthur II Leg 2: Kodiak, AK – Dutch Harbor, AK

Position	Name	Affiliation	Berth
Cruise Leader	Jay Barlow	SWFSC	
ID Expert	Cornelia Oedekoven	AFL	
Biopsy Project Leader	Juan Carlos Salinas	AFL	
Observer II	Holly Fearnbach	AFL	
Observer II	Michael Richlen	AFL	
Observer II	Beth Goodwin	AFL	
Observer I	Siri Hakala	HWNMS	
Acoustics Leader	Shannon Rankin	AFL	
Acoustics Assistant	Liz Zele	AFL	

Acoustics Assistant	Kate Stafford	NMML	
Cascadia Boat Driver	Todd Chandler	Cascadia	
Humpback Sanctuary	Allan D. Ligon	HWNMS	
Visiting Scientist	Jessica Redfern	AFL	
Visiting Scientist	Barb Taylor	SWFSC	
Teacher-at-sea/Volunteer	Linda Hoffman	Graduate School of Oceanography/URI	

McArthur II Leg 3: Dutch Harbor, AK – Kodiak, AK

Position	Name	Affiliation	Berth
Cruise Leader	Lisa Ballance	SWFSC	
ID Expert	Cornelia Oedekoven	AFL	
Biopsy Project Leader	Juan Carlos Salinas	AFL	
Observer II	Holly Fearnbach	AFL	
Observer II	Michael Richlen	AFL	
Observer II	Beth Goodwin	AFL	
Observer I	Mark Deakos	HWNMS	
Acoustics Leader	Shannon Rankin	AFL	
Acoustics Assistant	Liz Zele	AFL	
Acoustics Assistant	Lisa Munger	SIO	
Cascadia Boat Driver	Todd Chandler	Cascadia	
Humpback Sanctuary	Amanda Cummins	HWNMS	
Visiting Scientist	John Brandon	NMML	
Visiting Scientist	Bob Pitman	SWFSC	
Teacher-at-sea/Volunteer	Leigh Torres		

McArthur II Leg 4: Kodiak, AK – Seattle, WA

Position	Name	Affiliation	Berth
Cruise Leader	Karin Forney	SWFSC	.
ID Expert	Cornelia Oedekoven	AFL	.
Biopsy Project Leader	Juan Carlos Salinas	AFL	.
Observer II	Holly Fearnbach	AFL	.
Observer II	Michael Richlen	AFL	.

Observer II	Beth Goodwin	AFL	.
Observer I	Mark Deakos	HWNMS	.
Acoustics Leader	Shannon Rankin	AFL	.
Acoustics Assistant	Liz Zele	AFL	.
Acoustics Assistant	Julie Oswald	AFL	.
Cascadia Boat Driver	TBD	Cascadia	.
Humpback Sanctuary	Amanda Cummins	HWNMS	.
Visiting Scientist	NMML	NMML	.
Visiting Scientist	Megan Ferguson	SIO	.
Teacher-at-sea/Volunteer			.



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National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Southwest Fisheries Center

8604 La Jolla Shores Drive

La Jolla, California 92038

25 May, 2004

MEMORANDUM FOR: Commanding Officer, NOAA Ship *McArthur II*

FROM: Lieutenant JG Jason Appler, NOAA
Survey Coordinator, SWFSC

THROUGH: Jay Barlow
Chief Scientist, SPLASH Cruise 2004

SUBJECT: Statement of Intent to Use Small Boats, and Assessment of Risk for
small boat missions during the Structure of Populations, Level of
Abundance, and Status of Humpbacks 2004 (SPLASH) Cruise aboard
NOAA Ship *McArthur II*

During the SPLASH 2004 cruise, two small boats will be necessary for the primary focus of the research, which will be biopsy sampling and photography at sea. There are no island stops or surf zone landings planned for this cruise.

Assessment of Risk:

In addition to the general risks inherent in all small boat operations at sea, the greatest risks with small boat operations on this survey are likely to be:

- 1) Cold water operations
 - The SPLASH 2004 cruise will take place in the waters off the coasts of Alaska and Canada, where water temperatures are extremely cold. To increase the safety of those deploying in the small boats, the scientific party will provide Mustang suits to scientific crew, to be used at the discretion of the Command.
- 2) Launch and retrieval
 - The greatest risks are likely to be during launching and retrieval. To mitigate this risk we are taking extensive time before the cruise to drill crew and scientists on safe launching and retrieval techniques. Training will occur dockside and in calm waters of Puget Sound until all parties are satisfied that operations are as safe as possible.
- 3) Operations around whales
 - Although no whale researchers have been harmed by baleen whales, they are powerful animals and their potential to cause damage should not be ignored. To mitigate this risk we are hiring a scientist with extensive experience handling small boats around large whales. This scientist will be the primary vessel operator for whale biopsy and photo-ID missions on Legs 1 to 3. This



person will train ship's crew on safe methods for approaching large whales.

4) Cross-bow/firearm use

- Crossbows and rifle-powered dart guns will be used to biopsy whales. To mitigate this risk, we have hired one of the most experienced whale biopsy experts in the world to be the primary biopsy biologist. He will train others on safe use of these instruments.

5) Falls within the small boat

- Falls are generally caused by an unexpected movement of the boat caused by wave action or by a sudden acceleration or deceleration by the cox'n. To mitigate this risk, we will require the cox'n to notify all occupants prior to a rapid change in course or speed. Prior to accelerating from a stop, the cox'n will ask all occupants if they are ready and will wait for a reply before proceeding. The cox'n will also be responsible for watching for rouge waves and for notifying occupants if the vessel is expected to take a sudden lurch.